Amendments to the Drawings:

The attached six (6) sheets of drawings include new FIGS. 9a, 9b, 11, 12, 13, and 14. FIGS. 9a and 9b are based on original FIG. 9. FIGS. 11-14 are based on original FIG. 2 and illustrate the deformation of at least one of the hubs and the non-destructive disengagement related therewith. These new sheets show the features of claims 3, 4, 10, 11 and 12. FIGS. 9a, and 13 show plastic or elastic deformation of the outer hub and radial widening in the region of second outer running grooves. FIG. 9b shows plastic or elastic deformation of the inner hub and plastic or elastic deformation of the raceways of the inner hub. FIG. 14 shows the disengaged inner joint part and outer joint part, and also shows the geometrically and mechanically intact ball cage after disengagement of the joint parts.

Attached: Six (6) New sheets of drawings

REMARKS/ARGUMENTS

The claims are 2-13. Claim 12 has been amended to include features previously recited in claim 9 and as discussed in the paragraph bridging pages 18 and 19 of the disclosure, and claim 9 has been amended to depend from claim 12 and in view of its dependency on claim 12. In addition, new claim 13, dependent on claim 12, has been added. New drawings of FIGS. 9a, 9b, and 11-14 have also been added, and the specification has been amended to refer to the new drawings. Support for the amendments may be found, *inter alia*, in the disclosure in the first full paragraph on page 4 and at pages 18-20, and in the original claims and drawings. Reconsideration is expressly requested.

The drawings were objected to as failing to comply with 37 C.F.R. 1.83(a) as not showing every feature of the invention specified in the claims. In particular, the Examiner asserted that the disengaged joint parts of claim 12, plastic and/or elastic deformation of the inner/outer hub of claim 3, plastic and/or elastic deformation of the raceways of the inner hub of claim 4, radial widening of claim 10, and geometrically and

mechanically intact joint parts after disengagement of claim 11 were not shown in the drawings. In response, Applicants submit new drawings of FIGS. 9a, 9b, and 11-14. FIGS. 9a, and 13 show plastic or elastic deformation of the outer hub and radial widening in the region of second outer running grooves. FIG. 9b shows plastic or elastic deformation of the inner hub and plastic or elastic deformation of the raceways of the inner hub. FIG. 14 shows the disengaged inner joint part and outer joint part, and also shows the geometrically and mechanically intact ball cage after disengagement of the joint parts. In this connection, it should be noted that claim 3 is intended to refer to the elastic/plastic deformation of the *outer hub*, which is shown for example in new FIG. 9a. It is respectfully submitted that the foregoing drawings overcome the Examiner's objection to the drawings under 37 CFR 1.83(a), and Applicants respectfully request that the objection to the drawings be withdrawn.

Claim 4 was rejected under 35 U.S.C. § 112, first paragraph, as failing to enable the plastic and/or elastic deformation ability of the raceways of the inner hub separate from the deformation of the joint in general.

This rejection is respectfully traversed.

Under 35 U.S.C. 112, the detailed description of the invention need be only in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same. As discussed at pages 18-20, FIG. 9 of the original disclosure shows the relative position of the joint elements shortly before the actual disengagement. Further displacement of the inner hub would result only in a further relative displacement of the inner hub with respect to the outer hub while other significant changes do not occur because the disengagement of the respective joint elements is non-destructive. The joint elements remain intact and maintain their shape as displayed in FIG. 9. See claim 12 as amended.

It is respectfully submitted that from the recitation in the original claims together with the description in the disclosure at pages 18-20, one skilled in the art would know how to make and use a drive joint in which the deformation of at least one of the hubs and the non-destructive disengagement related therewith is

made possible by generating a free space for expansion by the balls emerging from the first raceway pairs.

For further explanation purposes, Applicants submit the following.

The starting point of the disengagment is shown in new FIG. 11 where the first set of balls 14 are in the first raceway pairs and the second set of balls 14a are in the second raceway pairs. In this context, balls 14 and 14a also represent the alternately distributed running grooves moving away from the inner hub axis in opposite direction. The deformation ring DFR around the outer hub serves for pointing out the outer hub's deformation later on.

As described in the specification in the paragraph bridging pages 18 and 19, as a result of high axial force, the inner hub 10 is pushed against the outer hub 16 in an axial direction. The disengagement of the respective joint elements is non-destructive. The joint elements remain intact and maintain their shape, as displayed in FIG. 9. In FIG. 12, due to opposite orientation of the raceway pairs, the second set of balls 14a of

the second raceway pairs are pressed outwardly against the outer hub 16, as indicated by the outwardly oriented arrows. This state is also displayed in FIG. 9. At the same time, due to the orientation of the opening of the first raceway pairs in the direction opposite to the orientation of the axial force in connection with the axial displacement of the inner hub 10, the the inner 18 and outer grooves 19 of the first raceway pairs diverge so that the balls obtain more space. Thus, the first set of balls 14 can evade radially inward, as indicated by the arrows.

The pressing of the second set of balls 14a against the outer hub 16 is accompanied by a slight deformation of the outer hub 16, as shown in FIG. 12. The second set of balls 14a of the second raceway pairs move slightly outwardly (shown exaggerated in the drawing) while the first set of balls 14 of the first raceway pairs can be released radially inwardly. As a consequence, an expansion of the outer hub 16 is initiated around the area of the four balls 14a of the second set of balls and not around the area of the first set of balls 14, so that the deformation ring DFN and the outer hub 16 assume a polygon shape. Therefore, the outer hub 16 is not widened completely but only at

the contact points of the second set of balls 14a. In this condition, radial widening in the region of the second outer running grooves 19a' occurs by way of the second set of balls 14a that are displaced radially outward. It is important that this widening is absorbed by the area around the first set of balls 14 where no pressing forces load the outer hub 16, thereby forming a relief space for the outer hub's expansion. Thus, by means of such space a non-destructive decoupling of the joint elements is achieved. As can be further taken from FIG. 9, the maximum widening of the outer hub only occurs over a relatively small displacement of the inner hub 10.

FIG. 14 shows the outer hub 16 and the inner hub 10 in a disengaged condition. The outer hub 16, due to its elasticity and the pure elastic deformation, has returned to its original shape. At the same time, the balls 14 and 14a are being held by the cage 15, which remains in its original position by dint of the outer hub 16. The cage 15 is geometrically and mechanically intact, to a great extent, in this condition. The inner hub 10, however, is decoupled.

In view of the foregoing it is respectfully submitted that Applicants' specification fully enables one of ordinary skill in the art to make and use plastic and/or elastic deformable raceways on the inner hub, as recited in Applicants' claim 4, and Applicants respectfully request that the rejection on this basis be withdrawn.

Claims 2-5, 7-11 and 12 were rejected under 35 U.S.C. 102(b) as being anticipated by *Jacob et al. DE 10209933*. Claims 6 and 12 were rejected under 35 U.S.C. 102(b) as being anticipated by *Jacob U.S. Patent No. 6,241,615* ("*Jacob II*").

This rejection is respectfully traversed.

As set forth in claim 12 as amended, Applicants' invention provides a drive joint for permitting a rotationally and axially fixed connection between a first and a second shaft sub-section of a drive shaft. The connection allows a limited angular displacement. The drive joint includes an inner hub as an inner joint part. The inner hub has an inner hub axis and an outer contour in which first inner running grooves and second inner

running grooves are disposed, distributed alternatively about the inner hub axis. The first inner running grooves run proceeding from the direction of the first shaft sub-section in the direction of the second shaft sub-section, and the groove root of the first inner running grooves moves away from the inner hub axis as this happens. The second inner running grooves run proceeding from the direction of the second shaft sub-section in the direction of the first shaft sub-section, and their groove root moves away from the inner hub axis as this happens.

The drive joint also includes an outer hub as an outer joint part. The outer hub has an outer hub axis and an inner contour, in which first outer running grooves and second outer running grooves are disposed, distributed alternatively about the outer hub axis. The first inner running grooves lie opposite the first outer running grooves and form first raceway pairs. The second inner running grooves lie opposite the second outer running grooves and form second racway pairs, in each instance. The first outer running grooves run proceeding from the direction of the first shaft sub-section in the direction of the second shaft sub-section, and their groove root approaches the outer hub axis as this happens. The second shaft sub-section run proceeding

from the direction of the second shaft sub-section in the direction of the first shaft sub-section, and their groove root approaches the outer hub axis as this happens. The inner hub and/or the outer hub is configured as a deformation element.

The drive joint also includes a torque transfer mechanism between the inner hub and the outer hub as additional joint parts. The torque transfer mechanism has balls for transferring torque.

When a certain axial force in the direction of one shaft sub-section towards the other shaft sub-section is exceeded, the inner hub is axially displaced relative to the outer hub, the balls of the second raceway pairs are pressed outward radially so that the inner hub and/or the outer hub is at least locally deformed, the balls of the first raceway pairs are pressed radially inward by a greater amount than the amount resulting from the radial migration of the balls of the second raceway pairs, and the joint parts disengage, during which disengagement the inner hub and/or the outer hub is just plastically or elastically deformed and not destroyed.

In this manner, Applicants' drive joint as recited in claim 12 as amended provides a drive joint which can be non-destructively disengaged.

It is respectfully submitted that neither *Jacob et al.* nor *Jacob II* disclose a drive joint having all of the elements of Applicants' drive joint as recited in claim 12, and neither *Jacob et al.* nor *Jacob II* discloses a drive joint being non-destructively disengaged, as Applicants' drive joint as recited in claim 12 as amended can be.

Jacob et al. shows a joint with a similar basic design to the drive joint of Applicants' cliam 12 as amended but the focus of *Jacob et al.* is not directed to the deformability of the hubs which is made possible by the design of the raceway pairs. Hence, stress relief grooves, as indicated by the Examiner, are not necessary. Further, the stress relief grooves in *Jacob et al.* are provided for accomodating material that is displaced during the non-cutting production of the outer grooves by means of deformation, for example by means of hammering or stamping. The relief grooves for the drive joint as recited in claim 12 as

amended are not designed for such a purpose. In addition, the inner hub of *Jacob et al.* has a configuration which does not allow that the balls fall radially inwards after decoupling of the joint. Thus, the non-destructive disengagement as defined in the claims seems not to be possible with the joint known from *Jacob et al.*

Although an inherent disengagement is possible according to *Jacob II*, *Jacob II* does not state that any disengagement would be a non-destructive disengagement. The hubs of *Jacob II* also do not seem to be designed for deformability. Moreover, the flange (12) of the outer hub in *Jacob II* provides for a stiffness of the outer hub which does not allow the required deformations. See col. 5, lines 16-17 of *Jacob II*.

Whereas Applicants' drive joint as recited in claim 12 is not anticipated by *Jacob et al.* and is not anticipated by *Jacob II*, claims 2-10 and 13 which depend directly or indirectly on claim 12, are also not anticipated by *Jacob et al.* and not anticipated by *Jacob II*.

As set forth in claim 11, Applicants' drive joint for a motor vehicle can be connected with a first shaft sub-section and a second shaft sub-section. The drive joint has an outer joint part and an inner joint part disposed axially within the former, in which ball raceways are formed on the inside of the outer joint part and on the outside of the inner joint part, and in which balls are disposed in the ball raceways and spaced apart from one another by means of a ball cage. The joint is designed such that when a certain axial force in the direction of one shaft sub-section towards the other shaft sub-section is exceeded, the joint parts disengage. The ridges that point radially inward are formed between the ball raceways of the outer joint part, which are shaped and dimensioned in such a manner that the ball cage remains geometrically and mechanically intact, to a great extent, after disengagement of the joint parts, if an axial force that leads to the inner joint part and the outer joint part being pushed into one another is exceeded. In this manner, Applicants' drive joint as recited in claim 11 provides a drive joint which can be non-destructively disengaged.

For the same reasons as provided above concerning *Jacob et al.* with respect to claim 12, it is respectfully submitted that

Applicants' drive joint as recited in claim 11 is not anticipated by *Jacob et al. or Jacob II.*

In summary, claims 9 and 12 have been amended and new claim 13 has been added. The specification has also been amended. New drawings have been added. In view of the foregoing it is respectfully requested that the claims be allowed and that this application be passed to issue.

Respectfully submitted,
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Enclosures: (6) six sheets of new drawings

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on August 12, 2009.

Amy Klein